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Title: DIRECT BUILD-UP LAYER ON AN ENCAPSULATED DIE PACKAGE HAVING A MOISTURE BARRIER  
STRUCTURE

Assignee: Intel Corporation

**IN THE CLAIMS**

Please amend the claims as follows.

1. (Original) A moisture barrier, comprising:
  - a packaging material having a surface and at least one edge;
  - a first dielectric material layer disposed on at least a portion of said packaging material surface; and
  - at least one first barrier structure disposed on said first dielectric material layer proximate said packaging material edge.
2. (Original) The moisture barrier of claim 1, further including at least one additional dielectric material layer disposed over said at least one first barrier structure and said first dielectric material layer.
3. (Original) The moisture barrier of claim 2, further including at least one second barrier structure contacting said at least one first barrier structure, wherein at least a portion of said at least one second barrier structure extends through said at least one additional dielectric material layer.
4. (Original) The moisture barrier of claim 1, wherein said packaging material comprises an encapsulation material.

20. (Original) A method of fabricating a moisture barrier, comprising:

    providing a substrate having a surface and at least one edge;

    disposing a first dielectric material layer on at least a portion of said substrate surface; and

    forming at least one first barrier structure on said first dielectric material layer proximate said at least one substrate edge.

21. (Original) The method of claim 20, further including disposing at least one additional dielectric material layer over said at least one first barrier structure and said first dielectric material layer.

22. (Original) The method of claim 21, further including contacting at least one second barrier structure with said at least one first barrier structure, wherein at least a portion of said at least one second barrier structure extends through said at least one additional dielectric material layer.

23. (Original) The method of claim 20, wherein said forming said at least one first barrier structure comprises:

    depositing a seed layer on said first dielectric material layer;

    patterning a resist layer on said metal seed layer to define at least one elongate opening having a desired pattern for said at least one first barrier structure;

    plating a metal on said seed layer within said at least one elongate opening;

removing said resist layer;

removing a portion of said seed layer not having said metal plated thereon.

24. (Original) The method of claim 23, further comprising:

disposing a second dielectric material layer on said first dielectric material and  
said at least one first barrier structure;

forming at least one trench through said second dielectric material layer to expose  
a portion of said at least one first barrier structure; and

forming at least one second barrier structure on said second dielectric material  
layer, wherein a portion of said second barrier structure extends into said at least one  
trench to contact said at least one first barrier structure.

25. (Original) A method of fabricating a microelectronic package, comprising:

providing at least one microelectronic die having an active surface and at least  
one side;

providing a packaging material adjacent said at least one microelectronic die side,  
wherein said packaging material provides a surface substantially planar to said  
microelectronic die active surface;

disposing a first dielectric material layer on at least a portion of said  
microelectronic die active surface and said package material surface;

forming at least one first via through said first dielectric material layer to expose a  
portion of said microelectronic die active surface;

forming at least one first conductive trace on said first dielectric material layer, wherein a portion of said first conductive trace extends into said at least one first via to electrically contact said microelectronic die active surface; and

forming at least one first barrier structure on said first dielectric material layer proximate an edge of said package material surface.

26. (Original) The method of claim 25, wherein said forming said at least one conductive trace and said forming at least one first barrier structure comprises simultaneously forming said at least one first conductive trace and said at least one first barrier structure.

27. (Original) The method of claim 26, wherein said simultaneously forming said at least one first conductive trace and at least one first barrier structure comprises:

depositing a seed layer on said first dielectric material layer which extends into said first via;

patterning a resist layer on said seed layer to define at least one opening having a desired pattern for said at least one first conductive trace and at least one elongate opening having a desired pattern for said at least one first barrier structure;

plating a metal on said seed layer within said at least one opening and said at least one elongate opening;

removing said resist layer;

removing a portion of said seed layer not having said metal plated thereon.

28. (Original) The method of claim 27, further comprising:
- disposing a second dielectric material layer on said first dielectric material, said at least one first conductive trace, and said at least one first barrier structure;
- forming at least one second via through said second dielectric material layer to expose a portion of said at least one first conductive trace;
- forming at least one second conductive trace on said first dielectric material layer which extends into said at least one second via to electrically contact said at least one conductive trace;
- forming at least one trench through said second dielectric material layer to expose a portion of said at least one first barrier structure; and
- forming at least one second barrier structure on said second dielectric material layer which extends into said at least one trench to contact said at least one first barrier structure.
29. (Original) A method of fabricating a moisture barrier, comprising:
- disposing a first dielectric material layer on at least a portion of a substrate surface, the substrate including a surface and at least one edge; and
- forming at least one first barrier structure on said first dielectric material layer proximate said at least one substrate edge.

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30. (Original) The method of claim 29, further including disposing at least one additional dielectric material layer over said at least one first barrier structure and said first dielectric material layer.

31. (Original) The method of claim 29, further including contacting at least one second barrier structure with said at least one first barrier structure, wherein at least a portion of said at least one second barrier structure extends through said at least one additional dielectric material layer.

32. (Original) The method of claim 31, further including contacting at least one additional barrier structure with said at least one second barrier structure.

33. (Original) The method of claim 29, further including disposing from one to four dielectric material layers over said at least one first barrier structure and said first dielectric material layer.

34. (Original) The method of claim 29, further including disposing from one to three additional barrier structures over said at least one first barrier structure and said first dielectric material layer.